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ABSTRACT

The administrative process of bringing about change in an educational institution is directly associated with the introduction of technology. When placed in its proper perspective, educational technology should be introduced to help solve problems caused by stress; prior to its introduction, change procedures must be defined, a commitment to change must be negotiated and stated, and a climate for change must be developed. (SP)

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CHANGES IN ADMINISTRATIVE ORGANIZATION AIMED TO EFFECT THE INTRODUCTION OF APPROPRIATE EDUCATIONAL TECHNOLOGY

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CRITICAL BACKGROUND ASSUMPTIONS

Considerable space will be devoted in this discourse to certain radical changes in university administration and organizational patterns prior to the introduction of appropriate educational technologies. Simultaneously, it must be said that:

> Any change in college or university organization which is explicitly addressed to the implementation of educational technology will fail.

The successful introduction of educational technology into any institution must be judged against existing operational patterns and specific problems facing that institution. Heads of at least two major university systems have given their view as to broad university goals and problems which form the background against which change should be judged.

> Paradoxical as it may seem, I am convinced that the tremendous and terrifying problems which now suddenly face higher education in America are the most fortunate developments to have occurred. They make it mandatory for us to examine, really examine, what we are doing, to assess our educational philosophy, to adopt new methods and adapt old ones, to find new resources in teachers, facilities, and financing, and generally to raise hob with the status quo. We shall have to solve these problems, or higher education will make a steadily decreasing contribution to the welfare of the nation, especially in the quality of its products.
>
> -- Samuel B. Gould, Chancellor
> State University of New York
> Fall, 1965

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> Can the large university retain its stability, its integrity, and its usefulness to society by continuing to carry on in the same way as before, doing more and more of the same things, or must it change?
>
> It is my belief, and I hope it is yours, that it must change, that the pressures and strains are so intense and so persistent as to make innovation mandatory. We see old models, old attitudes, old methods, old values, being challenged and changed in society all around us. Can we expect the university, itself a social instrument, to escape unchallenged and unchanged? We cannot.
>
> -- John A. Hannah, President
> Michigan State University
> Fall, 1966

The introduction and/or expansion of educational technologies cannot and should not be one of the central problems of the university. John Gardner in his "Agenda for Colleges and Universities" (1965) has reached to the heart of some truly central problems when he calls for the restoration of the status of teaching and learning, the reformation of the undergraduate curricula, and the improvement of institutional forward planning.

Any organizational or administrative change must be explicitly dedicated to solving problems of the magnitude Gardner describes -- problems which no faculty member, regardless of his classical or traditional rigidity, can ignore. If educational technology is used to solve central university problems, it can and will take its rightful and prominent place. (A case in point -- Michigan State University clearly employs more different technologies on a larger scale with general faculty and student acceptance than any other institution in America.)

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Institutional Change Results from Stress

There is a truism abroad to the effect that "the only constant in our society is change." The truism is followed by a premise that "the speed of change is creating vast new stresses." While agreeing with the notion that change creates stress, there should be one added premise; namely, that "change is the direct result of stress," or expressed inversely "without stress there will be little or no change."

To illustrate -- the key operational unit in a university is the department. If the department can arrange its curriculum in such a manner that each professor is given the opportunity to teach his specialty regardless of what the students may need to know, little will change. If the department has a limited number of undergraduate students providing the possibility of (by departmental definition) optimal section size and minimal advising loads, it will continue its old patterns. If the number of graduate students are balanced so as to accomplish the necessary "service" teaching and maintain modest-sized seminars and modest advising loads, little will change. If the faculty is free to give (by departmental definition) optimal time to research and publication, it will resist change. If the financial resources are available for new positions, more graduate assistants, adequate labor, supplies, services and equipment, few changes in the system will occur.

In all of these instances the department will respond to almost any challenge to its curriculum, undergraduate or graduate instruction, or research by maintaining that it is doing a superior job. Under these "ideal" conditions, the introduction of educational technology will be rejected by faculty because it "decreases the quality of instruction by reducing the personal interaction between the faculty member and the student."

Given these "ideal" conditions and the accompanying rejection of technology, one might conclude that the best procedure for introducing educational technology would be to create artificial stress on the system deliberately. However, there are enough stresses already present on the system, as argued by Gould and Hannah, so that such a move is neither desirable nor necessary. The more realistic process is to identify stress which is creating critical problems and then introduce educational technology to help solve the problems.

Stresses Relate to Curriculum and Instruction

The principal departmental balances suggested as ideal conditions were small section size, minimal advising loads, adequate faculty and staff, and sufficent support dollars.

Section size and advising loads are a function of student numbers in proportion to faculty. Public universities have been and will continue to be pressed by society to take more and more students. Rising enrollments, coupled with the radical shift from the private to the public institutions, have created increased stress on the system. Public universities and colleges are forced to respond to the premise that the opportunity for higher education must be provided for all Americans who can potentially profit from it.

Adequate faculty and staff is the function of both availability and resources. The ratio of Ph.D.s on our university and college faculties is, in general, decreasing while the demand is increasing. Simultaneously, the cost of trained faculty is running ahead of new resources, thus creating real stress on our institutions.

Sufficient resources for faculty, staff, labor, supplies, services, and equipment are a function of new dollars. At present, despite an influx of

new dollars, the per capita student dollar is decreasing at a time when the worth of the dollar is diminishing. This phenomenon is bringing another stress on the system.

Finally, time for research or, for that matter, for the faculty member to teach what he wants, is a function of the number of students, adequate faculty and financial resources. As each of these ratios change in an undesirable direction, stresses on the system increase.

Institutional Stress Is Uneven

Thanks to the time-honored but dismal process of allocating university resources by historical "pie cutting," stresses are not comparable in all parts of the institution. Allocation of new dollars (departments are usually guaranteed those dollars they already have -- i.e., the base) have generally not reflected shifts in need. As a result, those departments under the greatest stress appear to be making the quickest response to the challenge of change. On the other hand, those departments in which at least the student-faculty ratio is favorable appear to be the most resistant to change.

Despite the inequities created by tradition and the speed with which resources can be reallocated, most departments can demonstrate great need when present conditions are compared with traditional ratios or goals.

Since new financial and human resources cannot be provided in the desired measure, and present resources cannot or at least are not reallocated in tempo with academic change, most colleges and departments have deep and profound frustrations. It is to these concerns that administrative reorganization and educational technology can respond.

THE CONTEXT OF UNIVERSITY RESPONSE

Prior to any administrative reorganization to bring about change involving educational technology, certain specific steps need to be taken. First, change procedures must be defined; second, a commitment to change must be negotiated and stated; and finally, a climate for change must be developed.

Problem Solving Procedures

A large majority of university studies resulting from stresses on the institution begin with an attempt to define institutional goals. While this may seem to be a highly desirable technique, it frequently proves to be fruitless. The goals of an institution are customarily stated in such bland terms as "to educate the individual to contribute to his society economically, socially, morally, and politically" or to the development of the "liberally educated thinking man." These general goals may read well in the front pages of college catalogs, but it is usually impossible to state them in specific action-oriented terms.

A much more fruitful procedure is to study emergent issues which result from stress. A series of mechanisms are available to identify problems and solve them.

Procedures for Identifying Problems

1. Faculty will consider seriously statements made by the president of an institution, such as those quoted earlier in this paper by Samuel B. Gould and John A. Hannah, particularly when they are followed by a series of clearly defined problems.

2. A prestiged ad hoc faculty committee can study broad institutional problems and make specific recommendations for modification. One example of this type of committee was the Select Committee established at the University of California, Berkeley, which brought more than 40 recommendations for major changes in the institution before the faculty and the administration. Another example is the Michigan State University Committee on the Future of the University, a prestiged faculty committee provided with released time for an analysis of the institution. Dozens of recommendations from this committee urged modification of the structures and procedures. A third example is the MSU Committee on Undergraduate Education which was, again, an ad hoc prestiged faculty committee which analyzed the problems of undergraduate education and made more than 70 recommendations for change. In each of these instances the committees were not a part of the normal administrative organization. In every case they had the advantage of being a select body of senior faculty commenting on critical problems. One brief quotation from the Report of the Committee on Undergraduate Education at Michigan State may indicate how a thrust toward implementation of educational technology was included.

> Faculty members, particularly those teaching large sections, should be encouraged to consult with personnel in Learning Service and in the Instructional Media Center concerning the possibility of using technical aids in their classroom instruction. Support for the development and use of such technical aids should be at a level sufficient to allow for a no-charge policy for departments using the service.

3. University position papers can be written. Such a position paper is exemplified in the Michigan State University Seven-Point Program which

proposed seven academic concepts for use by all faculties in the evaluation, review and development of their programs. In this paper, one recommendation was directly oriented to the implementation of educational technology. This recommendation reads as follows:

> It is proposed to put to use discoveries already made concerning the learning process itself, and to stimulate further research, through the establishment of a Learning Resources Center (later named the Instructional Media Center) to include and encourage the use of closed circuit television, film, teaching machines, programmed studies, and other aids.

4. Prestiged outside consultants can be invited in to look at university problems. The University of Missouri, Columbia has used this procedure to advantage. This technique provides the opportunity to selected consultants who hold established points of view. For example, Professor C. Ray Carpenter of Pennsylvania State University has served this function for a number of different institutions.

The point of the preceding paragraphs is that procedures do exist for bringing about action-oriented recommendations for the solutions of major university problems which almost invariably include the need for further implementation of educational technology.

Developing the Commitment for Change

The process for identifying problems and recommending solutions implies a full commitment to the necessity of change. This commitment must be understood and supported by all sectors of the academic community. A clear-cut

statement on the desirability of innovation including new technologies has been made by the Board of Trustees at Michigan State. The President, the Provost, and the deans have made public commitments to their position. Department chairmen have, in general, followed suit. Department faculties have been organized to examine their programs in the light of new developments in their disciplines. Even students have been encouraged to come forward with constructive proposals for the modification and improvement. In summary, all of the forces in the academic community have been encouraged to join in a common effort toward the solution of common problems.

Developing the Climate for Change

The university ad hoc committees, the university position papers, consultants, the stated commitment of administrators, faculty and students -- all contribute toward developing a milieu in which change becomes possible.

Michigan State University has, in addition, made use of internal conferences dedicated to innovation. As early as 1963 a Learning Resources Conference, which brought in experts from all over the country, was held for the faculty. More than 60% of the faculty took time from their heavy daily responsibilities to attend one or more conference sessions. In 1966, under the sponsorship of the U. S. Office of Education, a National Conference to Stimulate Research and Development on Curricular and Instructional Innovations in Large Colleges and Universities was held on the campus, and the dissemination of its results helped create a climate conducive to change.

Assuming a problem-solving orientation, a broad university identification of problems, a commitment by all parties concerned, and a climate conducive to

change, administrative organizational changes must be introduced which are geared to give immediate response in the implementation of change concepts as they evolve.

ADMINISTRATIVE REORGANIZATION TO INDUCE CHANGE

(And Facilitate the Introduction and Development of Educational Technology)

Administrative reorganization requires establishment of a central organization, coordination of university expertise, development of financial resources, and the establishment of adequate reward and communication systems.*

Reorganization of Central Administration

The central academic organization of the college or university should be reorganized to make the agent or agency for academic change an integral part of the administration.

Customarily the university academic administration may be characterized (to use an onerous military analogy) as a line organization which includes at its apex the provost or vice president for academic affairs, at its second echelon the deans of the various colleges, and as a third administrative echelon the chairmen of the various departments.

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*For specific details of the Michigan State University Educational Development Program see John E. Dietrich and F. Craig Johnson, "A Catalytic Agent for Innovation in Higher Education," Educational Record, Summer 1967, pp. 206-213.

For a national survey and evaluation of key educational development programs in the U. S. see F. Craig Johnson, "An Evaluation of Educational Development Programs in Higher Education," Project Report No. 401, Michigan State University, March 1968.

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There is also a central administrative staff organization related to the vice president for academic affairs. The administrative agency concerned with change should be a part of this staff organization rather than the line organization.

One major inhibitor to the introduction of change has been the lack of such a staff organization. Customarily new dollars have been infused into the line organization with the result that there has been expansion and proliferation of present procedures rather than specific emphasis placed on review and modification of programs. A central staff agency can influence the allocation of resources to the line administration.

One of the principal difficulties encountered by most educational technology agencies, such as audiovisual or television centers, is that they have only departmental status and are frequently attached to a particular college, for example the College of Education. As a result, other departments and colleges tend to regard such agencies as mere appendages rather than as an integral and central part of the institutional development process. Central focus will avoid this difficulty.

Several other characteristics of the change agency should be considered. First, the name of the organization should be carefully selected to indicate to the academic community that its mission includes concern for improvement in curriculum, instruction and the use of resources. At both Berkeley and Michigan State, these agencies are called an Educational Development Program. At Florida State, the program is called the Division of Instructional Research and Service. In four other institutions, the University of Illinois-Urbana, Pennsylvania

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State University, State University of New York-Stony Brook, and the University of Illinois-Chicago Circle, the agency is called the Office of Instructional Resources or a variation thereof. In each case, the agency has been given a generic name which labels it as concerned with the common university good.

Second, the agency should be kept small. The appearance of empire building must be avoided. The agency must avoid proliferation or duplication of the activities of any other university group.

Third, the directorate of the agency should be given visibility. This can be accomplished by placing the director ex officio on major faculty committees and on the principal legislative councils of the institution.

Fourth, the directorate must have an overview of all university operations. Placement on major committees and councils will provide the opportunity to see and understand the problems from a faculty as well as an administrative point of view.

Finally, the purposes of the agency should be clearly stated and should be service or problem-solving oriented. Examples of such purposes are: 1) to identify major problems in the curriculum and in the learning-teaching process, 2) to stimulate and conduct research which will suggest solutions to identified problems, 3) to undertake projects which give promise of improvement in instruction, 4) to provide service to all parts of the university community, 5) to facilitate implementation of approved solutions, 6) to identify and communicate progress in research, experimentation and implementation.

Organization and Coordination of Expertise

If the central agency for change is to have maximum effectiveness, the

university must reorganize and coordinate all support services basic to implementing change.

A number of existing agencies can be brought together to provide a more concerted effort to improve the curriculum and instruction, and provide a broader definition to the term educational technology.

The technology of institutional research, applied human learning, media application and evaluation should be centralized and coordinated. The techniques of these groups can then be directed to the identified problems.

The Office of Institutional Research can make a prime contribution to the change movement by asking the pertinent questions, by collecting and reducing data, and by specifying problems. A Learning Service can help the faculty with the specification of behavioral objectives and the organization and development of contents. A Media Service, which should include expertise in film, graphics, closed circuit television, computer assisted instruction, programmed learning, etc., can develop creative ways of reaching the defined objectives. An Evaluation Service, composed of testing and measurement experts, can help to evaluate experiments and improve testing, examination and certification procedures. Ideally, the libraries should be included within this framework since books are the most used learning resource and need to be coordinated with and treated like any other resource.

The purpose of this coordination is threefold. First, it will provide a centralized all-university service which can be controlled and supported to the equal benefit of all departments. Second, it will provide expert human resources which are necessary to the solution of instructional

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problems. It can be argued that today's professor is so concerned with keeping up with his subject matter that it becomes impossible for him to be an expert in learning, technology and evaluation. Finally, the coordination of these services will avoid duplication and competition.

If the various learning resource agencies report to different administrative offices, duplication and competition result. This can be demonstrated at almost any university in the authors' experience. In such instances, decisions relative to different technologies are not based on an analysis of the learning problem, but are frequently sold by avid devotees of particular brands of hardware. For example, if the campus has a film service and a closed circuit television service, these groups may compete. To make matters worse, in some institutions closed circuit television is free to the user while film production is charged to the user. In such a case, the user chooses closed circuit television because of its apparent economy, despite the fact that television and film are almost never equally appropriate to the solution of a learning problem. Coordination of learning resources permits a rational decision of the appropriate media application.

Administrative Allocation of New Financial Resources

Change in a university and implementation of educational technology depends heavily upon the allocation or reallocation of resources. The creation of an agency, such as an Educational Development Program, provides a powerful device for rechanneling new dollars.

As mentioned previously, line budgetary operations in all of the institutions with which these authors have had any contact are not based on a thorough and systematic evaluation of need, nor are they typically used to promote change.

In an earlier portion of this paper we referred to historical "pie cutting" and pointed out the sluggishness of the dollar response to stress. A change agent can provide a critical review of present practices, and through forward planning the opportunity to bring strong pressures in the reallocation of resources.

At Michigan State University it can be clearly demonstrated that prior to the introduction of the change agent, new dollars were invariably used to produce more of the same. To be explicit, new dollars were placed where there were increased numbers of students, always within the framework of the same old instructional models and procedures and without much regard for evaluation of what was most effective (quality) and most efficient (cost). Few examples of radical change in instructional or curricular patterns could be demonstrated prior to the introduction of the change agent.

The new organization permitted taking new dollars off the top and assigning them to those groups who were willing to experiment with specific and real changes in instruction. In a sense Michigan State has followed the applied management science technology of industry. It has taken a significant percentage of its academic resources (one-half of one percent of its entire academic budget - small but a start) and used these resources to improve its principal product -- instruction and student learning. Obviously, reallocation of these resources, while creating some (though remarkably minimal) dissatisfaction in the line operation, has stood as the greatest single example of institutional commitment to improved instruction.

External resources have an even greater impact. During the first three years of the Educational Development Program activity, the project was modestly supported on a matching basis by the Ford Foundation. Dollars coming from this source had the obvious advantage of permitting the institution to move sharply into the change process without appearing to withdraw support from the ongoing operation. Existence of outside dollars permitted MSU to phase in its own new dollars.

At the risk of being sued for heresy, we must maintain that the Federal Government, principally in the form of the U. S. Office of Education, has severely limited its impact on the change process by virtue of its granting procedures. Federal dollars are available for research, but not for development in any broad sense. Federal dollars are available for specific projects, but are not available to agencies which can, by virtue of being totally conversant with the instructional problems determine what kinds of projects can provide conspicuous results. Federal granting procedures frequently have unbelievable time delays which cool the enthusiasm of the faculty member or group interested in attacking immediate problems now. If there is one single recommendation which should be made above all others, it would be to change the direction of Federal support from research to development, and to change the granting procedure from project grants to catalytic agency grants.

The Association of American Colleges, in a recent statement, has urged that there be "federal institutional grants for instructional purposes." The principle is viable; the procedure proposed is doubtful. Their second guideline suggests:

> Support should be available to all eligible institutions of higher education for expenditure at their discretion within the generally accepted definition of instructional services and departmental research.*

Such grants are mandatory if we are to succeed in introducing instructional change and educational technology. By the same token, it must be argued that if the grants were to be made to institutions rather than to clearly defined change agents established within the institutions, the money almost certainly will go into typical line operation activities.

Finally, on the matter of dollars, it is important to recognize that small amounts of money applied at the right time and the right place can bring about remarkable change. The change dollars available at Michigan State have amounted to approximately $250,000 a year, yet these dollars have brought about more than 150 projects, of which almost 100 have been directly related to educational technology.

Administrative Development of Reward Systems

If an institution is truly interested in reshaping its curricular and instructional patterns, strong emphasis must be brought to bear upon the reward of those who take the initiative for the improvement. If an institution believes that it is essential to provide major emphasis upon improved instruction to balance the emphasis upon more and better research, it must introduce a clearly visible reward system. For example, at Michigan State

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*For the complete statement see "Federal Institutional Grants for Instructional Purposes," A Statement by the Association of American Colleges, 1818 R Street, N.W., Washington, D.C., February 1968.

administrative commitment has been given to the recognition of improved instruction. Modifications have been made in central administrative procedures as they relate to promotion, tenure and salary systems. Visibility and reward have been given to faculty members who have made significant contributions to instruction as well as those who made significant contributions in research. While the change agency makes no direct contribution to these modifications, its overview of the instructional process provides for ample opportunity to affect the reward system. For example, universities frequently offer distinguished faculty awards which usually go to senior research scientists. At Michigan State, there has recently been introduced an award system for both exciting young teachers and teaching assistants. These kinds of changes are shifting, albeit gradually, the attitude of the faculty to a balance between the two traditional functions of a university -- teaching and research. Such a reward system is, of course, one more example of visible university-wide commitment.

Administrative Development of Communication Systems

Almost every university has a newsletter, a faculty highlights publication, or some kind of mechanism for pointing out current achievements. This is, however, not enough. Systematic communication of the change that is taking place, of the success and failure of instructional experiments, is necessary. Not only will such a system give visibility to the individual faculty, but far more important it helps to break down the disciplinary and departmental barriers to the change process. For example, at Michigan State we have found that successful multi-media laboratory techniques developed in Physiology have now been adopted in Soil Science, Nursing, Linguistics, Urban Planning,

Biology, Engineering, etc. A careful internal communication system which pointed out the applicability of this technique in different disciplines was, in part, responsible for the crossing of the departmental and disciplinary barriers.

The overt communication system at Michigan State consists of two internal publications. One, EDP REPORT, which details the characteristics of various faculty projects. The second, EDP COMMENT, is a faculty forum in which new ideas and new techniques in learning, media and evaluation are discussed and frequently debated with argument and counterargument. EDP REPORT and EDP COMMENT are broadsided to the campus on a schedule of approximately one communication every three weeks.

In addition to the overt communication system, an intensive covert communication system exists. This is made possible by continuing liaison between the staff agency and the various line officers and through the device of ex officio positions on principal academic committees and councils with the faculty.

Ramifications of the Central Administrative Agencies in the Colleges and Departments

Since faculty innovators can be identified and the amount of change in various departments and colleges can be measured, the impact of the change agency reaches directly to the grass roots of the institution. At Michigan State, most of the relationships between the Educational Development Program and the faculty are extremely informal. They are brought about by the monitoring, evaluating and servicing of the operating projects. In addition, in several

instances formal liaison has been established between the departments and the colleges and the agency by actually supporting, on a part-time basis, a liaison agent in the unit. Thus the faculty member becomes a focal point for change, readily available in the particular unit.

THE PLACE OF EDUCATIONAL TECHNOLOGY IN THE SYSTEM OF CHANGE

This paper has concerned itself with the administrative process of bringing about change in an educational institution. It has attempted to place educational technology in its proper perspective. While it may not appear to have always been addressed directly to the subject of educational technology, almost every element of administrative reorganization is directly associated with the introduction of technology. As mentioned above, approximately 2/3 of all of the changes wrought at Michigan State have made significant use of technology. The place of technology has been assured because it has been introduced only in those instances where it fulfilled the three criteria of 1) appropriateness, 2) acceptance, and 3) cost.

By placing technology in its proper perspective as one, but only one, of the procedures to improve instruction, faculty disenchantment has largely vanished. In general, faculty has been convinced that the change agency and the Instructional Media Center believe in the improvement of instruction and will apply media only in those instances where it can solve instructional problems.

Having adhered with great care to the criterion of appropriateness, the university has been able to fulfill the second and extremely difficult criterion of acceptance. Faculty and student acceptance are genuine.

Thorough evaluation of faculty and student attitudes have been rigidly coupled with each application of technology. The results of these evaluations clearly indicate that the technological applications have been successful and accepted.

Finally, new cost studies, while embryonic in form and somewhat crude in nature, relate the financial impact of technology upon the institution. While decisions concerning technology are not made on cost alone (they also include cost-quality, cost-trade off and cost-scope decisions)*, cost analyses have supported the view that technology is not more expensive than other forms of quality instruction.

This paper has been devoted to the explication of an administrative reorganization model for institutional change. The model provides a major place for educational technology. The model is viable. Any institution which accepts the premise that a break with traditional instructional procedures is mandatory may profit from close examination of its characteristics.

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*For details see F. Craig Johnson and John E. Dietrich, "Cost Analysis of Instructional Technology," A Paper Prepared For The Commission on Instructional Technology, October, 1968.